

Application No. 10/537,966
Second Preliminary Amendment

Docket No.: 13826-00016-US1

AMENDMENTS TO THE CLAIMS

1. (currently amended) Abrasive particles of composition selected from the group consisting fused or sintered corundums, zirconium corundums, silicon carbides and boron carbide, other abrasives and mixtures thereof
the abrasive particles having a sheathing comprising an aqueous binding agent and a complex fine grained complex oxide compound, wherein the complex fine grained oxide compound is of the composition comprises $A_xB_yO_z$ and that A_x and B_y , where A and B are different elements and x and y are greater than zero, the oxygen being present in the stoichiometric ratio to A_x and B_y, with x and y being natural numbers >0 and z corresponding to a product of the sum of (x+y) multiplied by a factor between 1.5 and 2.5

the sheath coatings of the particles affording enhanced surface area to the underlying substrate particles and being thermodynamically stable and highly adherent, thus effecting enhanced abrasion performance of the particles.

2. (previously presented) Abrasive particles in accordance with Claim 1 wherein the binder comprises a silicate.

3. (previously presented) Abrasive particles in accordance with Claim 2, wherein the silicate binder comprises colloidal silicic acid.

4. (previously presented) Abrasive particles in accordance with Claim 1 wherein element A is a metal as characterized in the periodic system of elements.

5. (currently amended) Abrasive particles in accordance with Claim 4, wherein the complex fine grained oxide compound of the general composition $A_xB_yO_z$ contains at least one element from the group of metals in the periodic system of elements.

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6. (previously presented) Abrasive particles in accordance with Claim 5, wherein the elements from the group of metals are selected from the group consisting of titanium, zirconium, iron, cobalt nickel and combinations.

7. (previously presented) Abrasive particles in accordance with Claim 1 wherein element B is selected from the group consisting of amphoteric elements in the periodic system of elements.

8. (currently amended) Abrasive particles in accordance with Claim 1 wherein the complex ~~fine grained~~ oxide compound $A_xB_yO_z$ contains at least one element selected from the group consisting of amphoteric elements in the periodic system of elements.

9. (currently amended) Abrasive particles in accordance with Claim 8, wherein the amphoteric elements are selected from the group consisting of vanadium, chromium, manganese, zinc, tin antimony and combinations.

10. (currently amended) Abrasive particles in accordance with ~~one or several of~~ Claim 1 wherein the sheathing contains 0.05-5.0 weight % of the complex ~~fine grained~~ oxide compound relative to the mass of the untreated particles.

11. (currently amended) Abrasive particles in accordance with ~~one or several of~~ Claim 10, wherein the sheathing contains 0.1-2.0 weight % of a complex ~~fine grained~~ the complex oxide compound relative to the mass of the untreated particles.

12. (currently amended) Abrasive particles in accordance with ~~one or several of~~ Claim 10 wherein, the sheathing contains a binding agent portion of 0.05 – 2.0 weight % relative to the mass of the untreated particles.

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13. (currently amended) Abrasive particles in accordance with Claim 12, wherein the binding agent portion preferably amounts to 0.1-1.0 weight % relative to the mass of the untreated particles.

14. (currently amended) Method for the treatment of abrasive particles comprising

i. wetting in an initial step the abrasive particles in a mixer with a liquid silicate binding agent,

ii. admixing the wetted abrasive particles in a second step with a complex fine grained complex oxide compound of the general formula comprising $A_xB_yO_z$, where A_x and B_y etc. from claim 1 the abrasive particles and complex fine grained oxide compound being mixed until the complex fine grained oxide compound is substantially evenly distributed over the surface of the abrasive particles[,] to form sheaths thereon, where A and B are different elements and x and y are greater than zero, and z corresponding to a product of the sum of (x+y) multiplied by a factor between 1.5 and 2.5, and

iii. in a third step, thus heating the sheated abrasive particles being subjected to heat treatment to enhance adhesion of the sheathing.

15. (previously presented) Method in accordance with Claim 14, wherein the mixing periods in Steps i) and ii) each amount to 0.5 and 5 minutes.

16. (currently amended) Method in accordance with Claim 14 wherein the heat treatment heating is carried out at temperatures between 100 and 900°C.

17. (previously presented) Synthetic resin-bound abrasive, products made with abrasive particles in accordance with Claim 1.